DALLAS SMITH CORP.®

Owner's Manual

IntelliSYNC®
Air-Ride Suspension System

Ford E-450
Low Floor Cab Chassis

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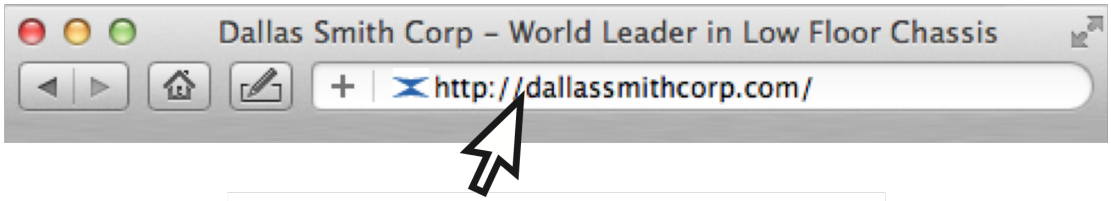
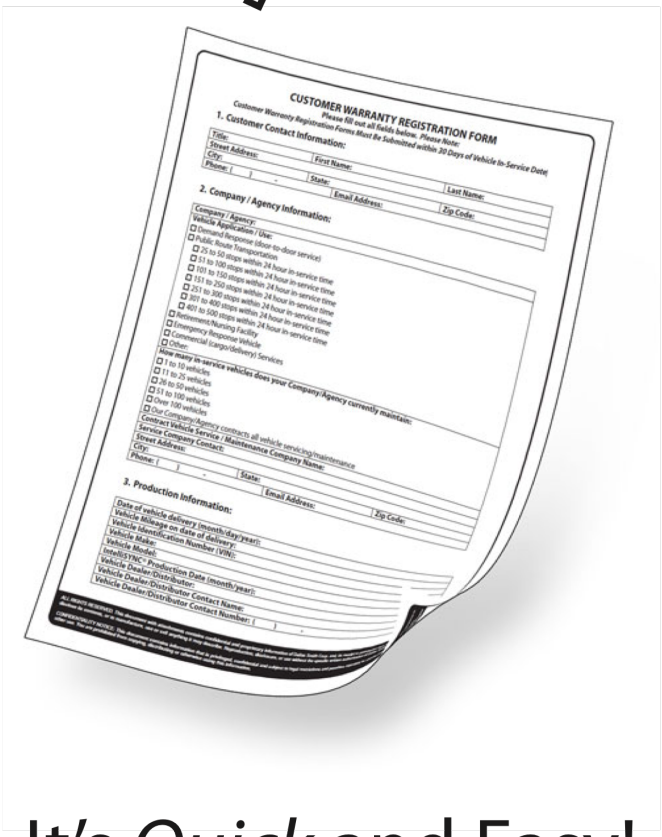
Please go to www.dallassmithcorp.com and register your vehicle **within 30 days of vehicle in-service date** to activate your warranty.




CUSTOMER WARRANTY REGISTRATION FORM
1. Customer Contact Information:
2. Company / Agency Information:
3. Production Information:

It's *Quick* and Easy!

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Introduction

Dallas Smith Corp. and your selling dealer thank you for selecting one of our quality products. Our commitment to you and your vehicle's suspension system begins with quality protection and service.

This Owner's Manual explains in detail the operational information for your 2010-2011 IntelliSYNC® Air Ride Suspension System: model Ford E-Series.

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DSC-IS-W2

IntelliSYNC® Warranty

Your satisfaction is our #1 goal. If you have questions or concerns about your vehicle, we suggest you follow these steps:

1. Prior to performing any servicing, contact your Sales Representative or Service Advisor at your selling/servicing dealership to identify your inquiry or concern.

2. If your inquiry or concern remains unresolved, contact DSC Customer Service.

DALLAS SMITH CORP.®

Dallas Smith Corp.
Customer Service Department
1220 N. Jackson Street
Greencastle, IN 46135

PH: (765) 653-1715
FX: (765) 653-4494

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CUSTOMER WARRANTY REGISTRATION FORM

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IMPORTANT INFORMATION YOU SHOULD KNOW

WARRANTY STATEMENT

Dallas Smith Corp. (DSC) warrants that any IntelliSYNC® Ford E-Series air-ride suspension system, sold by it and placed in on-the-road service is warranted to be free from defects for a period of 36 months or 36,000 miles (whichever shall occur first), after being placed in service, **except** for the powertrain, body and other components manufactured or provided by Ford Motor Company, and for tires installed on the vehicle. Ford Motor Company warrants such items, therefore please refer to the Ford Vehicle Manual for terms and conditions established by Ford. Tires are warranted solely by the tire manufacturer. All warrantable repairs must be done in accordance with DSC's published repair procedures and service manual or supplements. Warrantable repairs must be authorized by DSC prior to servicing the chassis and all warrantable repairs must be invoiced within 30 days of service completion.

Any warranty of merchantability, fitness or fitness for a particular purpose is expressly disclaimed and null and void. No other warranty is directly or indirectly expressed or implied.

This warranty shall not apply to any vehicle which shall have been repaired or altered in any way so as in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence, or accident, nor which shall have been operated at a speed exceeding the factory rated speed or loaded beyond the factory rated load capacity in violation of Dallas Smith Corp.'s instructions.

Repairs done in accordance with DSC's published repair procedures and service manual and supplements **will not void** DSC's standard warranty. **Please contact DSC for prior authorization to make any repair not covered by the DSC Service Manual or authorized repair procedure.**

Repairs made to the Ford powertrain and Ford installed components are covered by Ford's standard manufacturer's vehicle warranty and are subject to Ford's warranty terms and conditions.

IF YOU NEED CUSTOMER ASSISTANCE

Your Dealer is available to assist you with all your automotive suspension needs. Please follow the procedures outlined on the front page of this booklet.

KNOW WHEN YOUR WARRANTY BEGINS

Your **Warranty Start Date** is the day you take delivery of your new vehicle or the day it is first put into service (for example, as a dealer demonstrator), whichever occurs first.

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Please complete and return attached warranty registration form or register online at www.dallassmithcorp.com within thirty (30) days of taking delivery of your new vehicle.

CHECKING YOUR VEHICLE'S SUSPENSION SYSTEM

We try to check vehicle's suspension system carefully at the assembly plant, and we correct any damage to IntelliSYNC® Suspension System items. But occasionally something may slip past us, and a customer may find that suspension system damage occurred before he or she took delivery. If you see any damage when you receive your vehicle, please notify your dealership/distributor within five (5) business days.

MAINTAIN YOUR VEHICLE'S SUSPENSION SYSTEM

Your vehicle contains an Owner's Guide and Scheduled Maintenance Guide, (both are also available online at www.dallassmithcorp.com). The Scheduled Maintenance Guide indicates the scheduled maintenance required for your IntelliSYNC® Suspension System. Proper maintenance guards against major repair expenses resulting from neglect or inadequate maintenance.

It is your responsibility to make sure that all of the scheduled maintenance is performed and that the materials used meet DSC engineering specifications. Failure to perform scheduled maintenance as specified in the Scheduled Maintenance Guide will invalidate warranty coverage on parts affected by the lack of maintenance. Make sure that receipts for completed maintenance work are retained with the vehicle and confirmation of maintenance work is always retained and properly entered into your Scheduled Maintenance Guide.

WHO PAYS FOR WARRANTY REPAIRS

You will not be charged for repairs covered by any applicable warranty during the stated coverage periods, unless specifically stated elsewhere in this guide.

Some states and/or local governments may require a tax on a portion of warranty repairs. Where applicable law allows, the tax must be paid by you, the owner of the vehicle.

During the Limited Standard IntelliSYNC® Warranty period, dealers or distributors may receive instructions to provide no-cost, service–type improvements – not originally included in your Scheduled Maintenance Guide – intended to increase your overall satisfaction with your IntelliSYNC® Suspension System.

THE LIMITED STANDARD WARRANTY - IntelliSYNC® SUSPENSION SYSTEM

LIMITATIONS AND DISCLAIMERS

All of the warranties in this booklet are subject to the following limitations and disclaimers:

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The warranties in this booklet are the only expressed warranties applicable to your IntelliSYNC® Suspension System. DSC does not assume or authorize anyone to assume for it any other obligation or liability in connection with your vehicle or these warranties. No person, including DSC employees, may modify or waive any part of these warranties.

DSC reserves the right to make changes in, or additions to, IntelliSYNC® Suspension Systems built or sold by them at any time without incurring any obligation to make the same or similar changes or additions to IntelliSYNC® Suspension Systems previously built or sold.

DSC reserves the right to provide post-warranty repairs, conduct recalls, or extend the warranty coverage period for certain IntelliSYNC® Suspension Systems or IntelliSYNC® Suspension System populations, at the sole discretion of DSC. The fact that DSC has provided such measures to a particular IntelliSYNC® Suspension Systems or IntelliSYNC® Suspension System population in no way obligates DSC to provide similar accommodations to other owners of similar suspension systems.

As a condition of these warranties, you are responsible for properly using, maintaining, and caring for your IntelliSYNC® Suspension System as outlined in your Owner's Guide and Scheduled Maintenance Guide. DSC recommends that you maintain copies of all maintenance records and receipts for review by DSC.

DSC is not responsible for any time or income that you lose, any inconvenience you might be caused, the loss of your transportation or use of your vehicle, the cost of rental vehicles, fuel, telephone, travel, meals, or lodging, the loss of personal or commercial property, the loss of revenue, or for any other incidental or consequential damages you may have.

Punitive, exemplary, or multiple damages may not be recovered unless applicable law prohibits their disclaimer.

You may not bring any warranty-related claim as a class representative, a private attorney general, a member of a class of claimants or in any other representative capacity.

DSC shall not be liable for any damages caused by delay in delivery or furnishing of any products and/or services.

The warranties contained in this booklet and all questions regarding their enforceability and interpretation are governed by the law of the state of Indiana.

YOUR LIMITED STANDARD WARRANTY COVERAGE

Your Limited Standard Warranty Coverage lasts for 3 years (thirty-six months) – unless you drive more than 36,000 miles before 36 months (3 years) elapse. In that case, your coverage ends at 36,000 miles.

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WHAT IS COVERED

Under your Limited Standard Warranty, if:

- Your IntelliSYNC® Suspension System is properly operated and maintained, and was taken to an authorized dealer, distributor or technicians; then the authorized dealer, distributor or technicians will, without charge to you, repair, replace, or adjust all parts on your IntelliSYNC® Suspension System that malfunction or fail during normal use during the applicable coverage period due to a manufacturing defect in factory-supplied materials or factory workmanship.

  This warranty does not mean that each IntelliSYNC® Suspension System is defect free. Defects may be unintentionally introduced into vehicles during the design and manufacturing processes and such defects could result in the need for repairs. For this reason, DSC provides the Limited Standard Warranty in order to remedy any such defects that result in vehicle part malfunction or failure during the warranty period.
  The remedy under this written warranty, and any implied warranty, is limited to repair, replacement, or adjustment of defective parts. This exclusive remedy shall not be deemed to have failed its essential purpose so long as DSC, through its authorized dealer, distributor or technician, is willing and able to repair, replace, or adjust defective parts in the prescribed manner. DSC's liability, if any, shall in no event exceed the cost of correcting manufacturing defects as herein provided and upon expiration of this warranty, any such liability shall terminate.

  When making warranty repairs on your vehicle, the authorized dealer, distributor or technician, will use DSC parts or remanufactured or other parts that are authorized by DSC, at the discretion of DSC.

  Nothing in this warranty should be construed as requiring defective parts to be replaced with parts of a different type or design than the original part, so long as the IntelliSYNC® Suspension System functions properly with the replacement part. Moreover, DSC and its authorized dealers, distributors and technicians, are entitled to a reasonable time a reasonable number of attempts within which to diagnose and repair any defect covered by this warranty.

  In certain instances, DSC may authorize repairs at other than DSC authorized dealers, distributors or technicians.

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WHAT IS NOT COVERED

Damage Caused By:

- accidents, collision or objects striking the IntelliSYNC® Suspension System (including driving through a car wash);
- theft, vandalism, or riot;
- fire or explosion;
- using contaminated or improper fuel/fluids;
- customer-applied chemicals or accidental spills;
- driving through water deep enough to cause water to be ingested into the IntelliSYNC® Suspension System;
- misuse of the vehicle, such a driving over curbs, overloading, racing or using the vehicle as a permanent stationary power source.

Damage Caused by Alteration or Modification:

The Limited Standard Warranty does not cover any damage caused by:

- alterations or modification of the IntelliSYNC® Suspension System, after the vehicle leaves the control of DSC authorized manufacturer/up-fitter facility;
- tampering with the IntelliSYNC® Suspension System, or with the other parts that affect the IntelliSYNC® Suspension System;
- the installation or use of a non-DSC part after the vehicle leaves the control of DSC authorized manufacturer/up-fitter facility.

Maintenance/Wear

The Limited Standard Warranty does not cover: (1) parts and labor needed to maintain the IntelliSYNC® Suspension System; and (2) the replacement of parts due to normal wear and tear. You, as the owner, are responsible for these items. See your Scheduled Maintenance Guide.

Other Items or Conditions Not Covered

The Limited Standard Warranty does not cover:

- vehicles that have had the odometer disconnected, altered, or inoperative for an extended period of time with the result that the actual mileage cannot be determined;
- vehicles that have ever been labeled or branded as dismantled, fire, flood, junk, rebuilt, reconstructed, or salvaged; this will void the Limited Standard Warranty;
- vehicles that have been determined to be a total loss by an insurance company; this will void the Limited Standard Warranty.

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CUSTOMER LIMITED STANDARD WARRANTY CLAIM PROCEDURE

Reporting Your Claim

1. You must notify DSC Customer Service prior to performing any repairs to receive a Work Authorization Number to be eligible for reimbursement. Please note that the Work Authorization Number does not guarantee payment but is an acknowledgement that the vehicle is within the warranty period in terms of date and usage miles that a claim has been activated. **It will be the responsibility of the operator to ensure that their repair facility is aware of and complies with the guidelines of this policy.**
2. To expedite the authorization process, you will need the IntelliSYNC® Suspension System identification number, or the last six digits of the Vehicle Identification Number (VIN), the date the vehicle was placed in service, and the current mileage. Please note the following:
   - **If our records do not include your IntelliSYNC® Suspension System warranty registration information, you will be required to complete one before any authorization for any repair can be issued. Warranty Registration forms are available online, or by mail/fax upon request.**
3. DSC will pre-approve .5 hours for diagnosis/inspection time prior to your submittal of warranty & claim information. If the diagnosis/inspection complaint does not reveal a warrantable failure, or result in a warrantable repair, the customer will be responsible for all charges including the pre-approved .5 hours for diagnosis/inspection.
4. The IntelliSYNC® Suspension System Operator's Manual contains information covering proper equipment use and maintenance schedules. Owner's/Operator's must adhere to these guidelines to be eligible for proper submittal of warranty & claims. **Vehicle/IntelliSYNC® Suspension System service records must be provided upon request.**

Pre-Repair Requirements

1. Authorization of repairs will require a written estimate/repair order of costs after determination that a warrantable condition is found to exist.
2. Estimates must contain the following information:
   a. A list of all parts necessary for specific job and if applicable, all parts that will be invoiced back to DSC.
   b. The cost of disassembly, inspection and diagnosis of any portion of the vehicle to determine extent of repairs needed.
3. Current labor costs, reflecting both hourly rate and number of hours to properly perform such authorized repairs must be listed.
4. Miscellaneous charges such as "shop supplies" must be defined. Actual dollar amounts must be listed, as percentages will not be accepted.

   NOTE: If it becomes necessary to exceed the original estimate in terms of parts or labor, the repair facility must notify Dallas Smith Corp. Customer Service prior to any additional work performed for authorization.

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5. Only the use of Dallas Smith Corp. supplied parts will constitute reimbursement unless prior approval has been obtained.

Parts Ordering

1. Replacement parts needed to effect warranty repairs must be acquired through DSC Customer Service to be eligible for reimbursement.

Post Repair Requirements

1. The final invoice or work order must include the following:
    - customer's name, address, and phone number;
    - the vehicle identification number;
    - the Sales Order Number or "S" number;
    - Mileage IN/Mileage OUT;
    - the cause and correction of the repair including detailed description of repairs and parts replaced;
    - the date the repair order was open and the date the repairs were completed;
    - the Work Authorization number from Customer Service.

Notes To Repair Facilities

1. Miscellaneous charges such as "shop supplies" must be listed as separate line items and shown on the final invoice as stated in "Pre-Repair Requirements."
2. All repairs must comply with any or all state and DOT requirements.
3. Downtime of vehicle and incurred costs associated due to the delay of parts shipments or any other condition beyond our control is not reimbursable and should not be listed on the invoice.
4. All failed parts are required to be returned to Dallas Smith Corp., and must be received before payment will be made. The Return Authorization will be sent with the replacement parts when shipped from Dallas Smith Corp.
5. All claims must be submitted within 30 days of completion of repairs to be eligible for reimbursement.

Submitting Claims by Mail:

Dallas Smith Corp.
Customer Service Department
1220 N Jackson Street
Greencastle, IN 46135

For Work Authorization call: (765) 653-1715
To submit Claims by fax: (765) 653-4494

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Operations Guide: Dash Panel Information w/Instructional Reference

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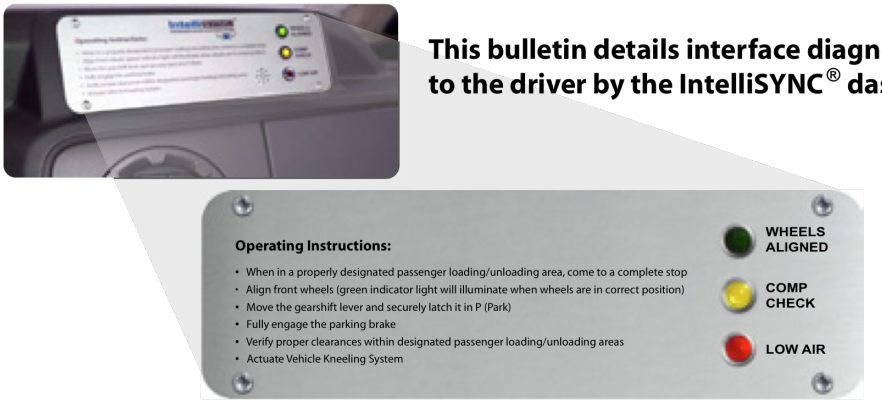
IntelliSYNC® Dash Panel Indicator Reference Sheet


Operating Instructions:
• When in a properly designated passenger loading/unloading area, come to a complete stop
• Align front wheels (green indicator light will illuminate when wheels are in correct position)
• Move the gearshift lever and securely latch it in P (Park)
• Fully engage the parking brake
• Verify proper clearances within designated passenger loading/unloading areas
• Actuate Vehicle Kneeling System
WHEELS ALIGNED
COMP CHECK
LOW AIR

This bulletin details interface diagnostics presented to the driver by the IntelliSYNC® dash plate.

Note pertaining to all lights - All lights will flash ON when the ignition is initially turned ON.

Green Light *(Wheels Aligned)* - Illuminates when the front wheels are positioned straight (i.e. the steering wheel is within 3/4-1 turn from center position). This indicates to the driver that the vehicle is safe to kneel. When not illuminated, vehicle kneeling is prohibited. Also, if the vehicle is currently kneeled, and the driver turns the wheels out of alignment, the vehicle will automatically raise (regardless of the switch input condition). However, if the switch is still active to kneel, once the wheels are re-aligned, the vehicle will kneel once again.

Yellow Light - *(Compressor Check)* - Illuminates when the following occurs: the compressor pressure switch is closed (telling the system to engage the compressor clutch and fill the system with air) but one of two factors is preventing that. 1) The engine RPM is greater than 2500. 2) The internal timer on the InPower module has determined that the compressor has been consistently running for 6 minutes which initiated a 4 minute dwell time before the compressor will engage again. Therefore, the yellow light will only illuminate when the compressor is supposed to be running but there is a system safety interlock preventing it. The Yellow Light also flashes briefly when the compressor initially activates at each cycle.

Red Light *(Low Air)* - Illuminates when one of the following occurs: the system pressure switch (located on the dry air tank) indicates that the system pressure is below 80 psig, the front passenger side proximity switch on the associated leveling valve indicates that vehicle is not yet at drive away/ride height, or the front driver side proximity switch on the associated leveling valve indicates that vehicle is not yet at drive away/ride height. When any one of these instances occur, the red Light will illuminate and the vehicle will be interlocked to not disengage from park. Red light may also flash briefly when driving over bumpy road conditions or uneven terrain. This is due to instantaneous/abrupt lowering of the suspension in those conditions. This will not have an impact on any vehicle interlocks, so long as the light does not remain ON.

Audible Buzzer - Sounds an audible alarm whenever the system pressure switch (located on the dry air tank) indicates that system pressure is below 80 psig.

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IntelliSYNC® Operating Instructions Reference Sheet

IntelliSYNC®
SYNCHRONIZED AIR-RIDE SUSPENSION SYSTEMS
by DALLAS SMITH CORP.®

Operating Instructions:

- When in a properly designated passenger loading/unloading area, come to a complete stop
- Align front wheels (green indicator light will illuminate when wheels are in correct position)
- Move the gearshift lever and securely latch it in P (Park)
- Fully engage the parking brake
- Verify proper clearances within designated passenger loading/unloading areas
- Actuate Vehicle Kneeling System

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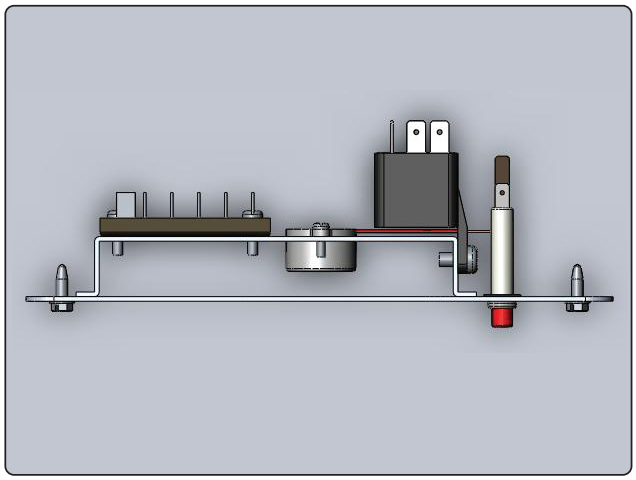
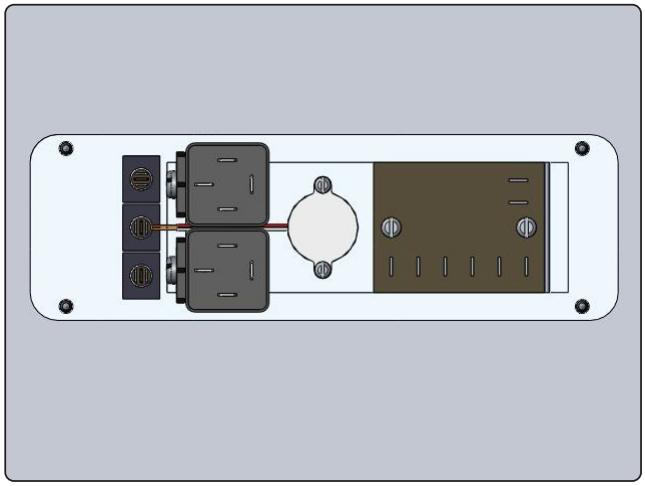
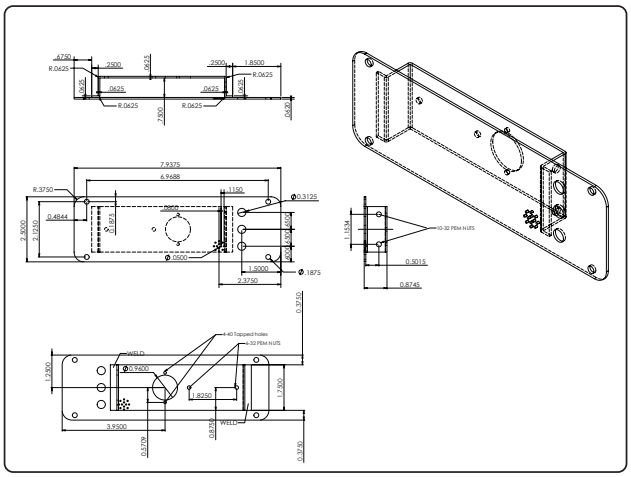
Top View



Rear View



Technical View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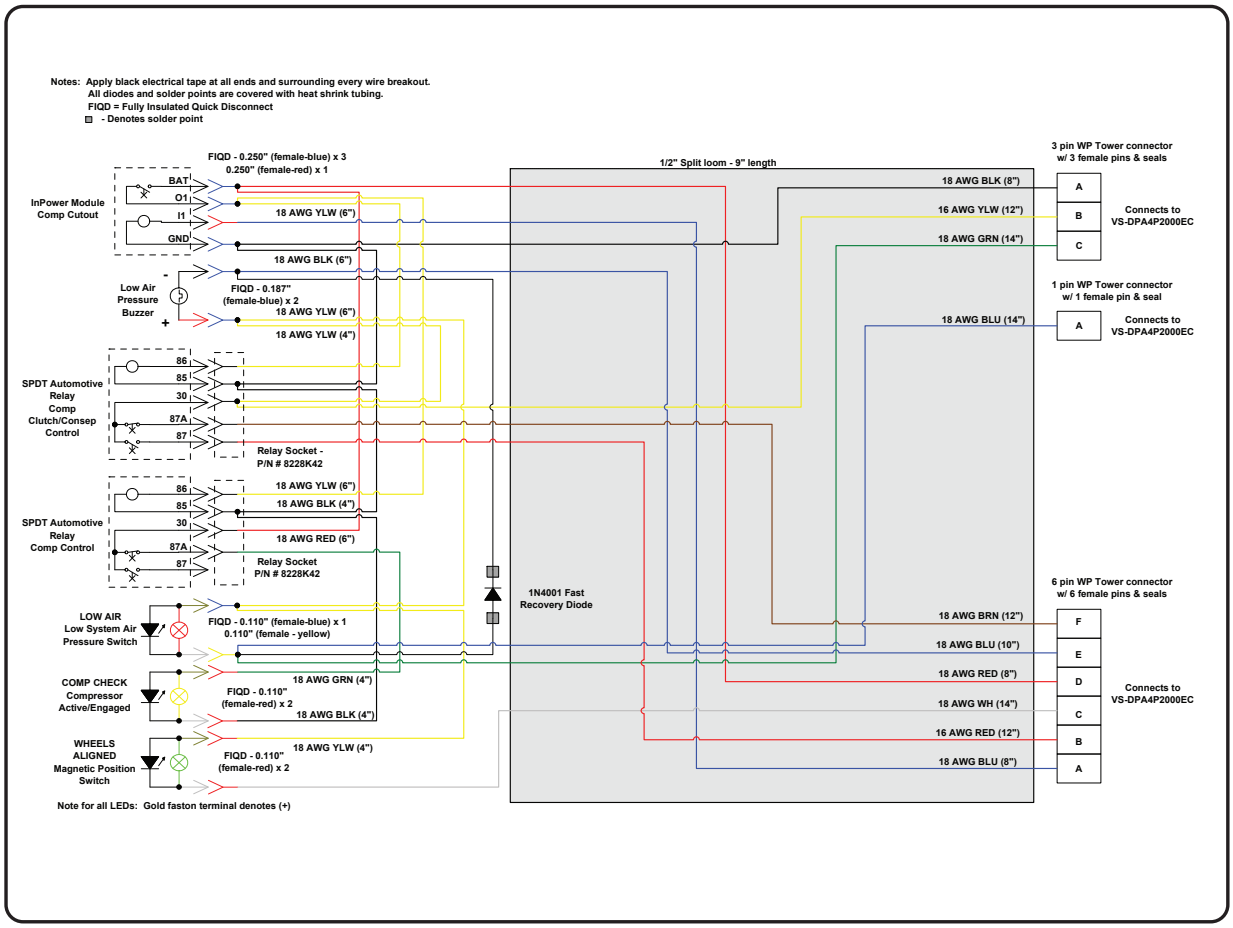
Dash Panel Harness:



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General Maintenance Information

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Introduction:
This guide describes the scheduled maintenance required for your IntelliSYNC® air-ride suspension system. Carefully following this schedule helps protect against major repair expenses resulting from neglect or inadequate maintenance.

It is your responsibility to see that all scheduled maintenance is performed. Failure to perform scheduled maintenance specific in this guide will invalidate warranty coverage on parts affected by the lack of maintenance. Be sure receipts for completed maintenance are kept with the vehicle and confirmation of the work performed is always recorded.

Instructions:
Please note – Warranty is void if unit is disassembled or operated without proper instruction.

Please note – If any system related issues are discovered during your unit's scheduled service/maintenance, please refer to your IntelliSYNC® suspension system's warranty reporting procedures.

Please note – Read these instructions carefully before maintaining/servicing this product. Failure to follow instructions may result in personal injury, death and/or property damage and may void warranty. Save these instructions for future reference.

Please note - All repairs should be performed by only an authorized service facility. Any attempt to disassemble or repair the unit may void warranty.

Owner checks and services
Certain basic maintenance checks and inspections should be performed by the owner or a service technician at the intervals indicated. Service information and supporting specifications are provided in this owner's guide.

Any adverse condition should be brought to the attention of your dealer/distributor or qualified service technician as soon as possible for the proper service advice. The owner maintenance service checks are not covered by warranties so you may be charged for labor, parts or fluids used.

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Check every scheduled maintenance:

- Compressor oil level; fill if necessary
- Compressor air-inlet filter; clean if necessary
- Suspension system components for leaks or damage (recommended use of non-corrosive soap & water mixture to be sprayed/applied on any suspect leak)
- Function operations of suspension system; ride height, full & side kneel
- Air springs for any abnormal wear or debris
- Air lines for any restrictions (i.e. improper tie-down placement) or obstructions
- Air components & fittings for any abnormal wear, debris or damage

Scheduled Maintenance and Log

The following section contains the “normal schedule”. This schedule is presented at specific mileage (kilometer) intervals with exceptions noted.

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Scheduled Maintenance:

Miles (x 1,000)	0.5	3	6	9	12	15	18	21	24	27	30	33	36	38	40	42	44	46	48	50
Kilometers (x 1,000)	0.8	4.8	9.6	14.4	19.2	24	28.8	33.6	38.4	43.2	48	52.8	57.6	60.8	64	67.2	70.4	73.6	76.8	80
Check Oil Level; fill if necessary	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inspect compressor accessory drive belt for any abnormal wear, debris or damage; replace if necessary	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Compressor air-inlet filter; clean or replace if necessary					•				•				•				•			
Suspension System Function Operation Check	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inspect all suspension air-system components for any leaks	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inspect wheels and related components for abnormal noise, wear, looseness or drag	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inspect air springs for any abnormal wear or debris	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inspect air lines for any restrictions (i.e. improper tie-down placement) or obstructions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inspect air components and fittings for any abnormal wear, debris, and proper connection	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inspect suspension & steering linkage rods & fittings for any abnormal wear, debris, damage, and design setting					•				•				•			•			•	
Inspect suspension related wiring for proper connections; clean and properly re-connect if necessary					•				•				•			•			•	
Inspect suspension system brackets, mounts & hardware for any abnormal wear, debris or damage		•		•		•		•		•		•		•		•		•		•
Inspect limit chains/straps						•					•				•					•
Inspect/Torque rear U-Bolts (300 ft. lbs.)	•					•					•				•					•

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System Performance Check List:

- Set parking brake.
- Start vehicle engine and allow air system to fully charge.
- Set steering wheel to the straight position and ensure that the steering straight light (green) on the dash panel is illuminated.
- Turn steering wheel 180 degrees to the right and ensure that the steering straight light (green) goes off. Return steering wheel to straight.
- Turn steering wheel 180 degrees to the left and ensure that the steering straight light (green) goes off.
- Return steering wheel to straight and open passenger compartment door.
- Initiate kneeling function. Both the right front and the right rear air bags should deflate.
- Deploy wheel chair ramp and verify that both the left front and left rear air bags deflate.
- Retract wheel chair ramp and close passenger door.
- Allow vehicle to return to normal ride height and allow compressor to re-charge the air system.
- Test drive vehicle to verify acceptable ride quality.

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Engine Driven Compressor

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Instructions:

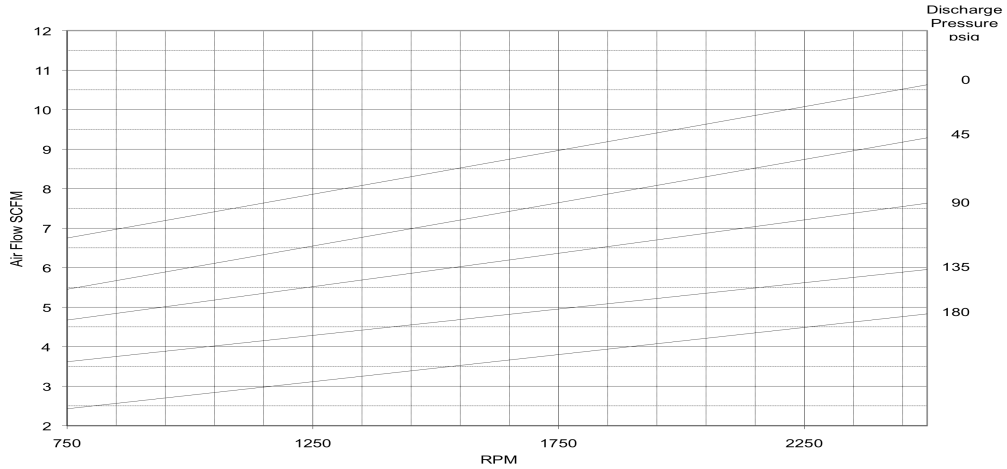
Please note – Warranty is void if unit is disassembled or operated without proper lubrication.

Please note – Motor oil is a consumable item. Oil must be added periodically, and brushes must be replaced periodically.

Please note – Read these instructions carefully before using (or installing) this product. Failure to follow instructions may result in personal injury, death and/or property damage and may void warranty. Save these instructions for future reference.

Make/Model: IntelliSYNC® HC-EDC YC4000EA210L

Performance Information:



Compressor rpm 1875

Discharge Pressure (psig)	0	45	90	135	180
Pressure Ratio	1.0	4.1	7.2	10.3	13.4
Horse Power (HP)	1.05	1.64	1.89	1.91	1.76
Air Flow (SCFM)	9.0	7.9	6.6	5.1	4.0

Compressor rpm 2068

Discharge Pressure (psig)	0	45	90	135	180
Pressure Ratio	1.0	4.1	7.2	10.3	13.4
Horse Power (HP)	1.23	1.79	2.06	2.04	1.99
Air Flow (SCFM)	10	8.2	7.0	5.4	4.2

Compressor rpm 2616

Discharge Pressure (psig)	0	45	90	135	180
Pressure Ratio	1.0	4.1	7.2	10.3	13.4
Horse Power (HP)	1.67	2.28	2.49	2.45	2.41
Air Flow (SCFM)	10.8	9.5	7.8	6.1	5.0

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Safety Information:
You are solely responsible for your own safety and the safety of those with you. Dallas Smith Corp. will not be responsible and will not assume any liability for indirect, incidental, or consequential loss, damage, injury, expense or inconvenience to property or persons as a result of use or misuse of this product.

- Compressor and motor surfaces become extremely hot during use. **To avoid serious burns, do not touch any part of this equipment with bare hands during (or up to) 30 minutes immediately following operation**.
- Only persons who have read and understand these instructions should be allowed to use/operate this compressor.
- **The air produced by this compressor is not fit for human or animal consumption and it must not be used to provide a breathing air supply**.
- Do not operate compressor with any damaged hose(s), fittings, or other air system related component.
- Do not pump anything but air.
- Do not leave unattended during use.
- If the equipment starts to vibrate abnormally, slow down or stall; STOP the motor immediately once in a safe location.
- Never operate near a flammable gas or liquid.
- Never store flammable liquids or gasses in the vicinity of the compressor.

- Keep the equipment's exterior clean and free of oil, solvent, and/or grease to reduce fire hazard.
- Disconnect power and release all pressure from the air system before attempting to install or perform maintenance to the system (tanks, air lines, etc.).
- Check all fastener and electrical connections at frequent intervals for proper tightness and cleanliness.
- Do not attempt to disassemble, modify or repair this equipment.

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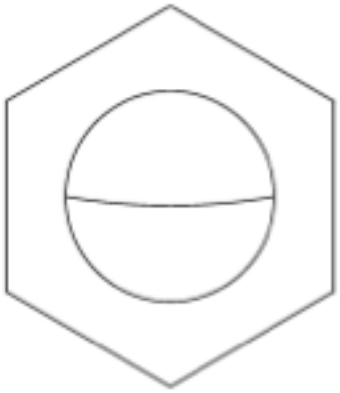
Oil Level Sight Glass:
The compressor is shipped with oil. Check oil sight glass after compressor has been sitting level for at least one hour. Hold a carpenter's level next to the unit if necessary to ensure it is level. If no oil is visible in window, remove the oil plug from either side of compressor. This will relieve the crankcase and allow oil in the overflow reservoir to drain back into the crankcase. If oil level is not visible within a few minutes, add oil until it is visible in window. Use only authorized full synthetic, diester 30-weight air compressor oil, ISO100 SAE30.



Oil Sight Glass

If you are unsure about any part of operation, contact the manufacturer for clarification.

Operating Instructions:
Since this is an oil bath type compressor, some oil discharge is normal and expectant. The compressor is equipped with an automatic shut-off position should the motor reach maximum operating temperatures until it cools off to a safe level (approximately 5 minutes).

Maintenance:
Check oil level after every 50 hours or operation (approximately 3000 to 3500 vehicle in-service miles). If no oil is visible in window, remove the oil plug and add full synthetic 30-weight air compressor oil.

Check compressor air filter element and replace if needed.

All repairs should be performed by the manufacturer only. Any attempt to disassemble or repair the unit may void warranty.

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Trouble Shooting: Engine Driven Compressor

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Low Discharge Pressure	1. Air Leak 2. Restricted Air Intake 3. Compressor Defective or worn	1. Tighten or replace any leaking fittings or connections 2. Replace/Clean Air Filter 3. Contact Manufacturer
Unit Runs Slowly	1. Low oil level 2. Compressor damaged or worn 3. Defective Check Valve 4. Defective Pressure Switch 5. Misadjusted Pressure Switch	1. Check oil level. Fill if necessary 2. Contact Manufacturer 3. Replace 4. Replace 5. Replace
Excessive Noise	1. Loose hardware 2. Low oil level 3. Compressor Defective or worn	1. Tighten hardware 2. Check oil level. Fill if necessary 3. Contact Manufacturer
Oil in the Discharge Air *Please note: A small amount (.5 to 2oz) is normal and expected, especially during initial in-service use (break-in period: approx. 1 hour duty cycle time)*	1. Restricted Air Intake 2. Excessive Oil Fill 3. Wrong type of Oil used 4. Compressor Defective or worn	1. Replace/Clean Air Filter 2. Drain oil to proper level 3. Use Manufacturer Authorized compressor oil. 4. Contact Manufacturer

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Air Springs

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General Information:
Firestone air springs are heavy duty, quality air springs designed to supplement your vehicle's existing suspension system. These durable air springs allow you to maximize your vehicle's load carrying capacity through the use of air pressure. Proper installation, use, and operation will provide the maximum service life and performance your air spring kit is capable of delivering. These instructions will help you obtain the maximum benefits available from your IntelliSYNC® air-ride suspension system.

Please note – Never exceed the manufacturer's recommended Gross Vehicle Weight Rating (GVWR). You should weigh your vehicle on a truck scale when it is fully loaded and in a level condition to determine if you are exceeding the manufacturer's recommended GVWR.

Basic Operation:
As your vehicle is loaded, the stock suspension is compressed under the weight of the load. Your vehicle's stock suspension system has been designed so that it will provide optimum performance and handling with a specific load on the vehicle. When your vehicle is loaded, its performance, handling characteristics, and ride quality may be compromised. As the stock suspension is compressed, the ride may be "mushy", and you may encounter sway and handling problems. As weight is added to the vehicle, the air springs become an active part of the suspension system. As more air pressure is added to the air springs, they will support more weight. You will be able to compensate for a heavy load by adding air pressure to the air springs, thereby reducing sway and handling problems associated with a heavy loaded vehicle.

General Safety Information:
As with your vehicle's tires, an air spring is a pneumatic device that supports a portion of the vehicle's weight. The air spring may fail as a result of punctures, impact damage, improper inflation, improper installation, or improper usage. To reduce the risk of failure, we strongly recommend the following:

- *Never exceed the manufacturer's recommended Gross Vehicle Weight Rating (GVWR). You should weigh your vehicle on a truck scale when it is fully loaded and in a level condition to determine if you are exceeding the manufacturer's recommended GVWR.*

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- *Inspect the inflated air springs to verify that they do not contact any component of the vehicle under normal suspension operation. The air spring must flex and expand during normal operation. There must be at least ½" clearance between the inflated air spring and any other component of the vehicle under normal suspension operation.*
- *Never attempt to remove any component of the air spring assembly when the air springs are inflated.*
- *If an air spring has failed while you are on the road, operate your vehicle at reduced speeds. High speed over rough roads will result in severe bottoming of the air spring and may result in damage to other vehicle components.*
- *Never attempt to drive the vehicle in an un-leveled condition. Failure to level a heavily loaded vehicle may result in excessive body roll and possible damage or injury.*
- *Never cut, weld, or modify the air springs or brackets.*
- *Do not use aerosol tire repair products in the air springs. If there is a hole in the air spring, it mush be replaced.*
- *Do not use a tire patch of any kind on the air spring. If there is a hole in the air spring, it must be replaced.*

Maintenance:

The following will help obtain the maximum service life from your air springs.

- It is considered normal for an air spring to lose some air pressure over time. Normal pressure loss should not exceed 3 to 4 psi per 24 idle hours. Each time you check the pressure in the air springs, you will lose 3 to 5 psi. The air pressure should be checked at regular intervals.
- It is recommended that the air pressure be checked according to the following guidelines:
    - When the vehicle is removed from long-term storage
    - At regular intervals during the continuous operation of the vehicle
- The brackets used to secure the air springs to the vehicle should be inspected periodically for damage and for loose fasteners. Ensure that the air line tubing is clear of any sharp edges and routed away from the exhaust system.

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- Accumulated sand, gravel, or other road debris on the air springs or brackets should be rinsed away with a garden hose each time the vehicle is washed.
- If it is necessary to lift the vehicle by the frame, first release the air pressure from the air springs. This will allow the air springs to extend to their maximum length without being damaged. The un-inflated air springs are capable of supporting the weight of the axe when the vehicle is lifted by the frame. After servicing of the vehicle is complete, lower the vehicle to the ground and re-inflate the air springs to the specified pressure.

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Trouble Shooting: Air Springs

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Air Spring will not Inflate	1. Ensure that the air line tubing is inserted into the air fittings as far as possible 2. Clear any dirt or debris from inside the inflation valves 3. Inspect the entire length of air line tubing to ensure that it is not kinked, damaged from exhaust or weld splatter, or cut due to contact with a sharp edge	▪ Contact manufacturer if symptom should continue following review of possible causes
Air Spring will not hold air	1. Normal pressure loss is no more than 3 to 4 psi per 24 idle hours 2. Apply a solution of soap and water to the air fittings, air line, and air sprigs to check for leaks. Tighten the air fitting or re-install the tubing in the air fitting to stop the leak. Rinse the soap and water solution from the system when complete	▪ Contact manufacturer if symptom should continue following review of possible causes
The Vehicle is not level	1. Check for proper inflation of the air springs on each side of the vehicle 2. Check for obstructions in the air system or vehicle components that may be restricting suspension travel	▪ Contact manufacturer if symptom should continue following review of possible causes
Helpful Hints: *Leaks occur most often at the threaded connection between the air fittings and the air springs. Tighten the fitting to engage the pre-applied orange thread sealant or until the nylon collar makes contact with the air spring, plus ¼-1/2 turn, depending with type of fitting being used.*	Helpful Hints: *The end of the air line tubing must be cut square and clean to avoid burrs in the connection to the air fittings. The push-to-connect fitting require a square cut to properly seal. The tubing can be removed from the fitting by first releasing air pressure for the system/spring. Push the collar on the fitting toward the body of the fitting. While holding the collar in, pull out the tubing. Cut the tubing squarely and push the tubing into the fitting as far as possible*	

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HCVs & Linkages

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General Information:

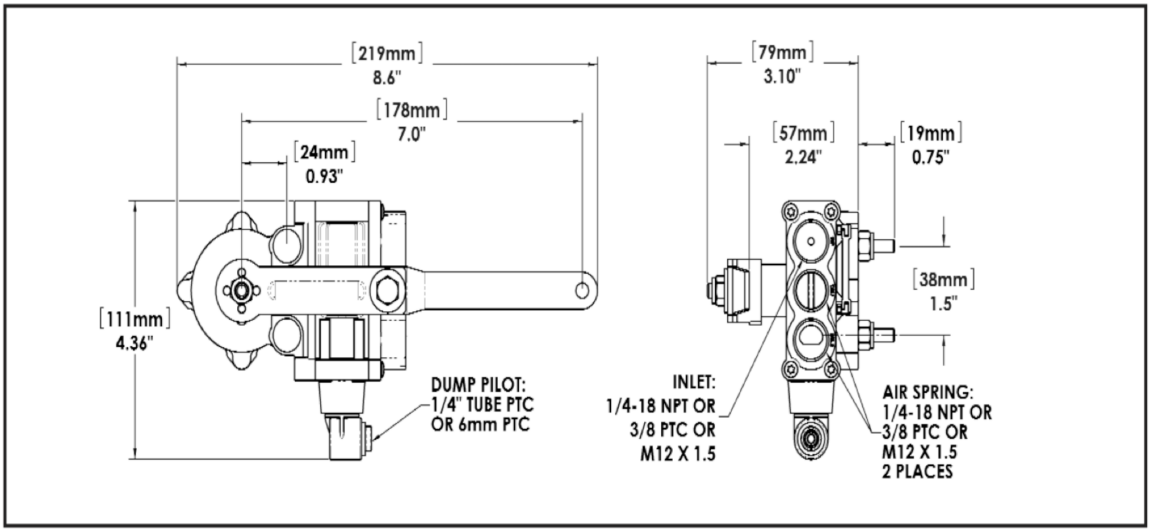
Please note – The HCB and linkage are designed to maintain the vehicle ride height as loads increase and decrease. Proper setup of the HCVs is critical to system performance. Prior to any assembly or disassembly, please read all instructions. Should you feel unable to properly perform the installation or adjustments of a HCV(s) contact manufacturer's technical services.

Please note – Incorrect installation of any HCB and associated components can impair suspension and vehicle performance. It is extremely important that the original equipment manufacturer's specifications be followed. Refer to suspension manufacturer's instructions for recommended valve location and ride height.

Please note – Do not us antifreeze or other solvents in an air supply line. Use of solvents or antifreeze can damage seals and void the warranty.

Please note – Conducting routine air system maintenance can help prevent any damage to air system components. Never introduce foreign chemicals into any air system.

Reference Dimension Details for IntelliSYNC® HCVs



Verifying System Operations:

Confirm the control arm is properly installed by raising the control arm approximately 20^0 above horizontal. Air pressure should inflate the air springs. If the air springs do not inflate:

a. Verify the air supply pressure is sufficient enough to open the pressure protection valve (usually greater than 85 psi).

b. Recheck the air lines for proper port connection.

c. Make sure that any suspension dump/exhausting feature is not activated.

d. Determine if the control arm and alignment identifier dimple of the interface cap are in the proper orientation.

e. If the air system still fails to inflate air springs, contact manufacturer's technical services

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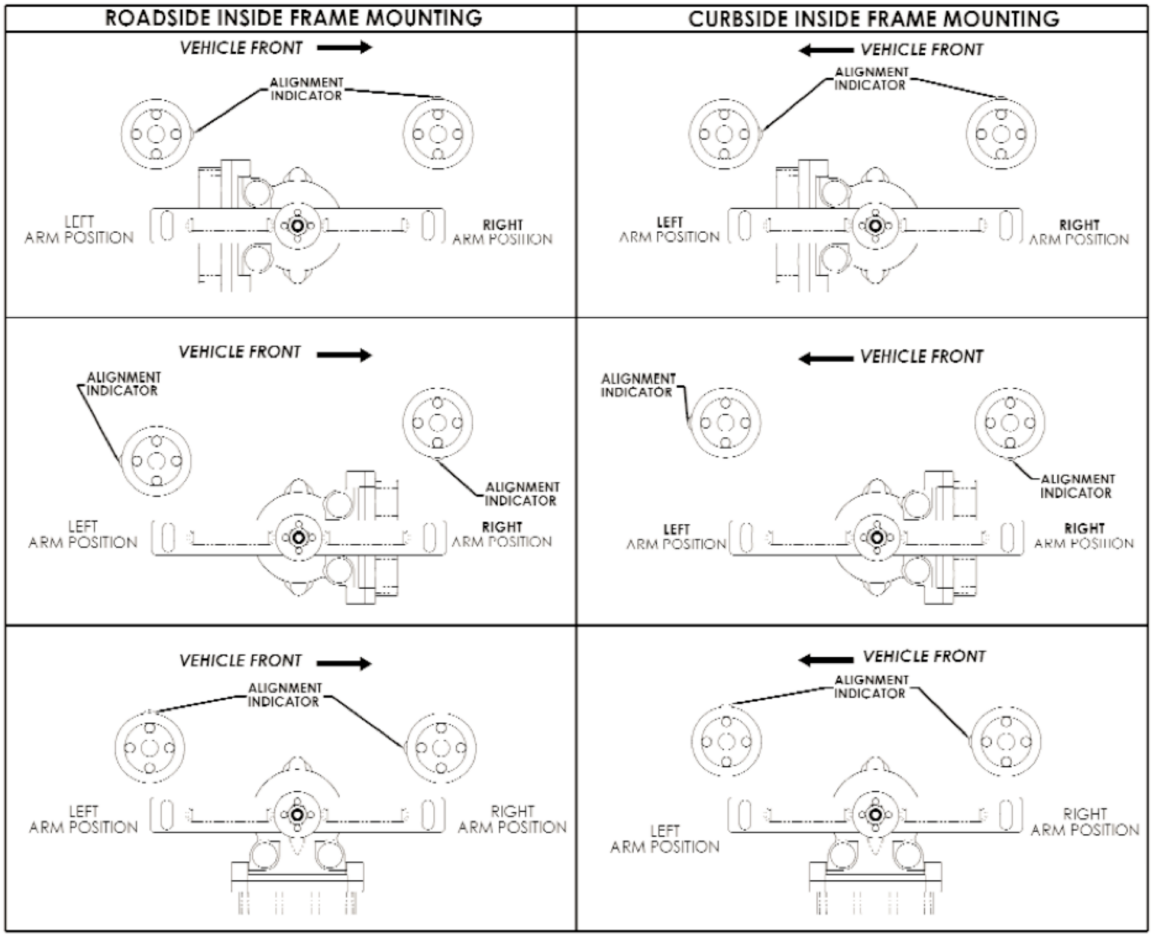

Ride Height Adjustment Instructions

Please note – The following procedures require the vehicle to be parked over an inspection pit or level surface and may require two people working simultaneously.

Please note – The vehicle should maintain air spring volume and remain near ride height during short periods out of service. An air suspension system can deflate during extended periods out of service.

Please note – A small amount of air may escape from the exhaust located under the interface cap; this is normal and should not cause alarm or require replacement of the valve.

- Bring the suspension to the recommended ride height. Ride height is measured approximately 4” from the bottom of the frame rail to the top-center of the rear axle, and approximately 6.125” from front suspension top mount plate to front suspension bottom mount plate. Refer to the

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suspension manufacturer's manual for proper ride height measurement and setting procedures.

- Verify proper connection between the linkage to the control arm and axle tab bracket.
- IMPORTANT – Adjustments to the suspension ride height requires system air pressure. Adequate system air pressure must be maintained throughout adjustment procedures.
- CHECK FOR PROPER RIDE HEIGHT – Disconnect the lower linkage end from the axle tab. Lower the control arm and linkage about 1" and hold for approximately 15 seconds to lower the suspension. Reconnect the lower linkage end, the suspension should return to ride height. Measure the ride height on both sides of the vehicle to verify that the suspension is with the manufacturer's specified tolerance.
- FINE ADJUST RIDE HEIGHT IF NECESSARY – Carefully adjust the linkage assembly or control arm to bring suspension to ride height. Your HCV may have an adjustable control arm, which provides approximately 1" of ride height adjustment. After each adjustment of the linkage or control arm repeat previous steps. This may require several attempts; repeat until proper ride height is obtained twice in a row.

  Please note – When using the adjustable control arm to make fine adjustments, torque bolts to 25-30 in lbs.

- FINAL CHECK – Soap Spray test all air line connections for air leaks and verify that all fasteners are properly tightened.

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IntelliSYNC® System Wiring Schematics

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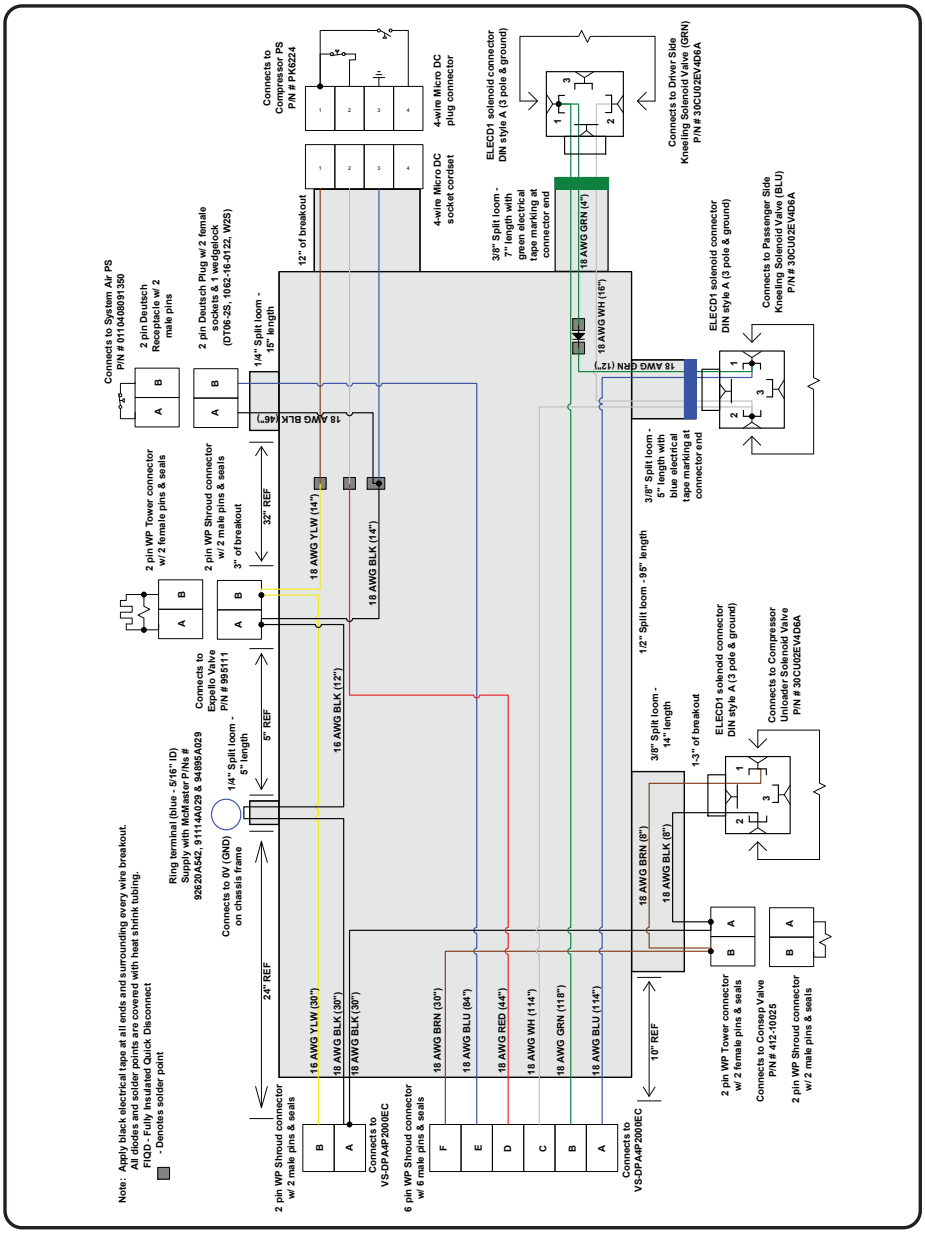
Wet & Dry Tank Harness:


Connects to Compressor PS P/N # PK6224
4-wire Micro DC plug connector
4-wire Micro DC socket cordset
12" of breakout
ELECD1 solenoid connector DIN style A (3 pole & ground)
Connects to Driver Side Kneeling Solenoid Valve (GRN) P/N # 30CU02EV4D6A
3/8" Split loom - 7" length with green electrical tape marking at connector end
18 AWG GRN (4")
18 AWG WH (16")
18 AWG GRN (12")
Connects to Passenger Side Kneeling Solenoid Valve (BLU) P/N # 30CU02EV4D6A
Connects to System Air PS P/N # 011040809136
2 pin Deutsch Receptacle w/ 2 male pins
2 pin Deutsch Plug w/ 2 female sockets & 1 wedgelock (DT06-2S, 1062-16-0122, W2S)
14" Split loom - 15" length
18 AWG BLK (45")
2 pin WP Tower connector w/ 2 female pins & seals
2 pin WP Shroud connector w/ 2 male pins & seals
3" of breakout
32" REF
18 AWG YLW (14")
18 AWG BLK (14")
3/8" Split loom - 5" length with blue electrical tape marking at connector end
1/2" Split loom - 95" length
Connects to Expello Valve P/N # 995111
14" Split loom - 5" length
5" REF
16 AWG BLK (12")
Ring terminal (blue - 5/16" ID) Supply with McMaster P/Ns # 9262DA542, 91114A029 & 94895A029
Connects to 0V (GND) on chassis frame
24" REF
3/8" Split loom - 14" length
1.3" of breakout
ELECD1 solenoid connector DIN style A (3 pole & ground)
Connects to Compressor Unloader Solenoid Valve P/N # 30CU02EV4D6A
18 AWG BRN (6")
18 AWG BLK (6")
16 AWG YLW (30")
18 AWG BLK (30")
18 AWG BRN (30")
18 AWG BLU (64")
18 AWG RED (44")
18 AWG WH (114")
18 AWG GRN (118")
18 AWG BLU (114")
10" REF
2 pin WP Shroud connector w/ 2 male pins & seals
Connects to VS-DP A4P2000EC
6 pin WP Shroud connector w/ 6 male pins & seals
2 pin WP Tower connector w/ 2 female pins & seals
Connects to Consep Valve P/N # 412-10025
2 pin WP Shroud connector w/ 2 male pins & seals
Note: Apply black electrical tape at all ends and surrounding every wire breakout.
All diodes and solder points are covered with heat shrink tubing.
FIOD - Fully Insulated Quick Disconnect
- Denotes solder point

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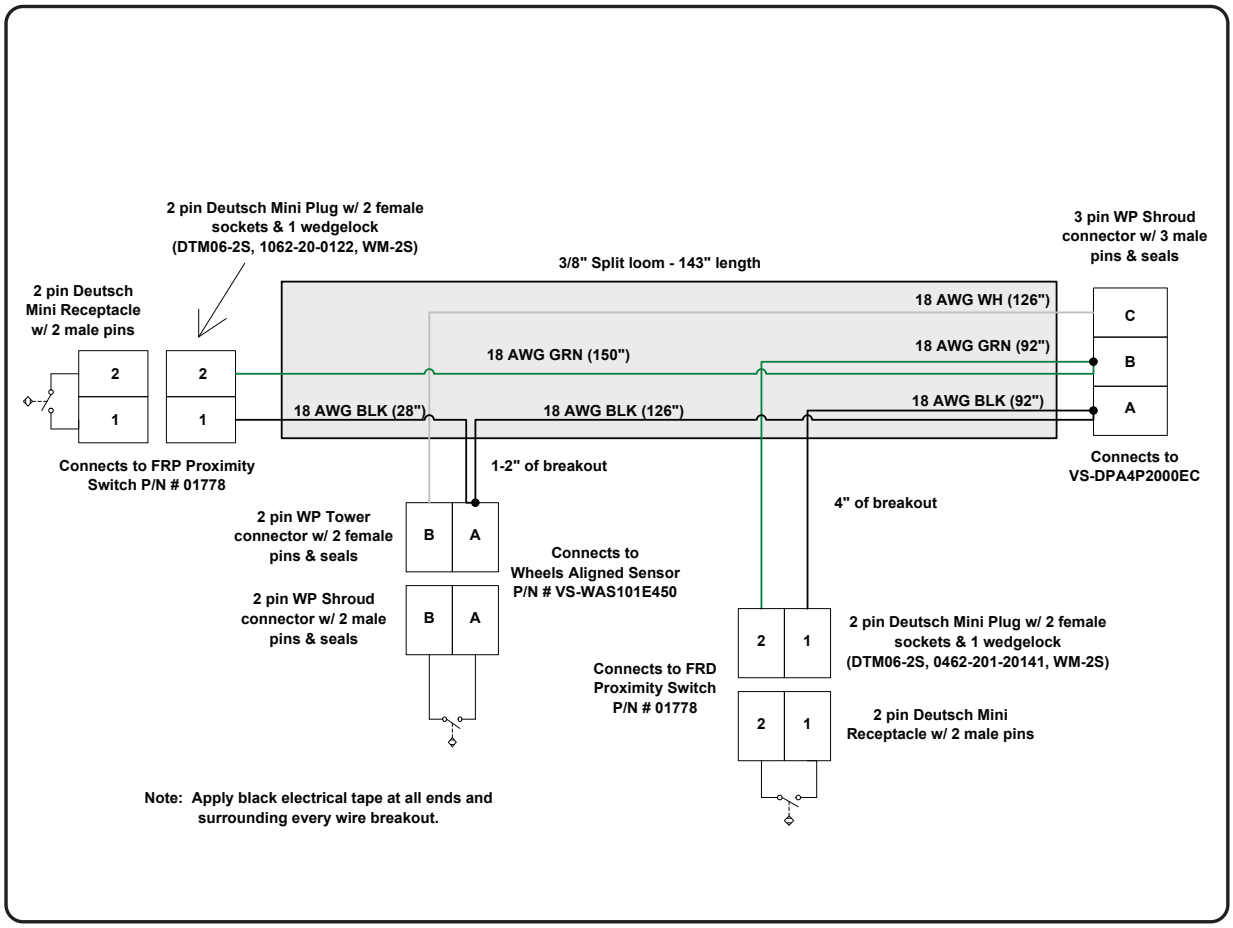
Front Pressure Switch & WA Sensor Harness:


2 pin Deutsch Mini Plug w/ 2 female sockets & 1 wedgelock (DTM06-2S, 1062-20-0122, WM-2S)
3 pin WP Shroud connector w/ 3 male pins & seals
3/8" Split loom - 143" length
2 pin Deutsch Mini Receptacle w/ 2 male pins
18 AWG WH (126")
18 AWG GRN (150")
18 AWG GRN (92")
18 AWG BLK (28")
18 AWG BLK (126")
18 AWG BLK (92")
C
B
A
2
1
Connects to FRP Proximity Switch P/N # 01778
1-2" of breakout
Connects to VS-DPA4P2000EC
4" of breakout
2 pin WP Tower connector w/ 2 female pins & seals
Connects to Wheels Aligned Sensor P/N # VS-WAS101E450
2 pin WP Shroud connector w/ 2 male pins & seals
2 pin Deutsch Mini Plug w/ 2 female sockets & 1 wedgelock (DTM06-2S, 0462-201-20141, WM-2S)
Connects to FRD Proximity Switch P/N # 01778
2 pin Deutsch Mini Receptacle w/ 2 male pins
Note: Apply black electrical tape at all ends and surrounding every wire breakout.

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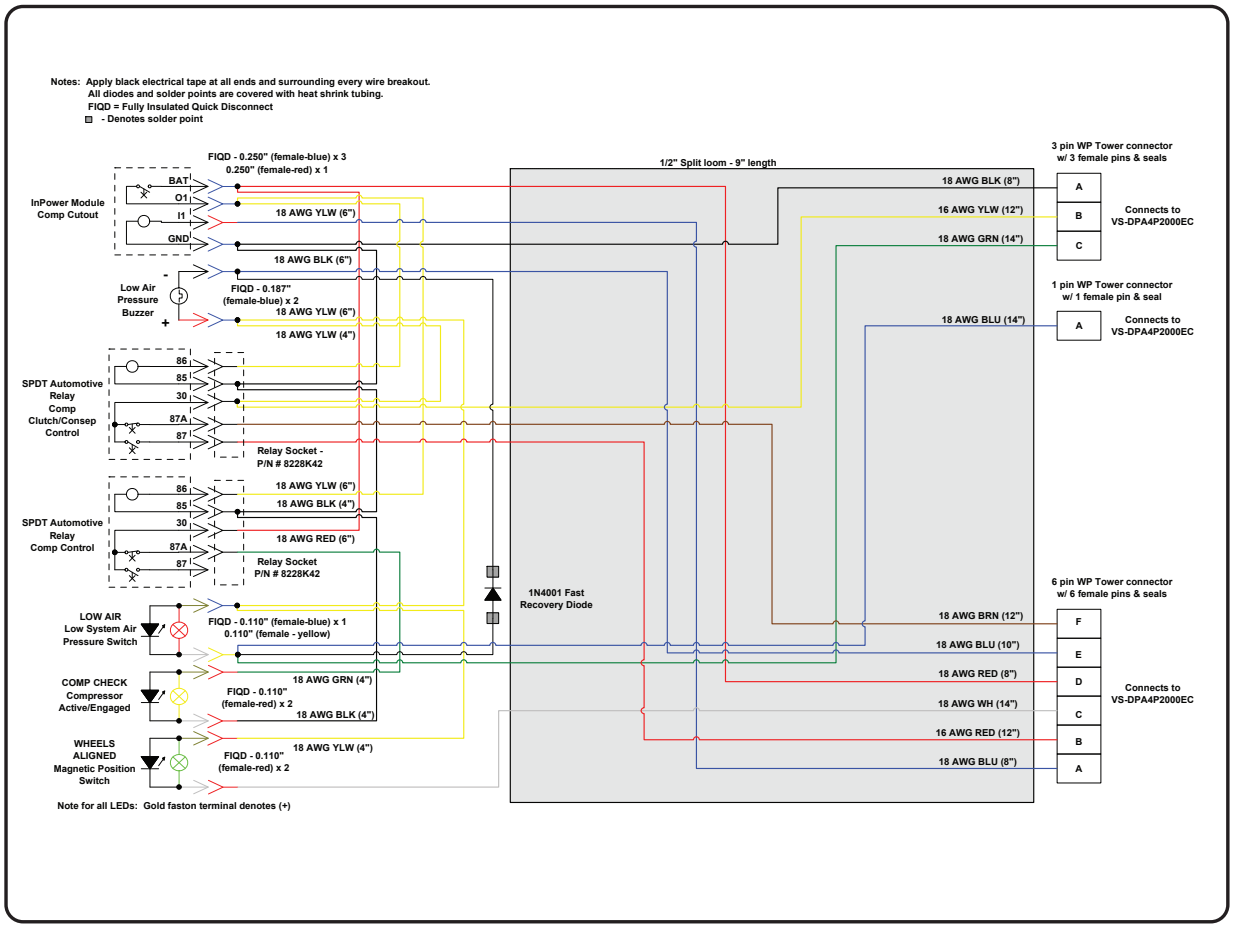
Dash Panel Harness:



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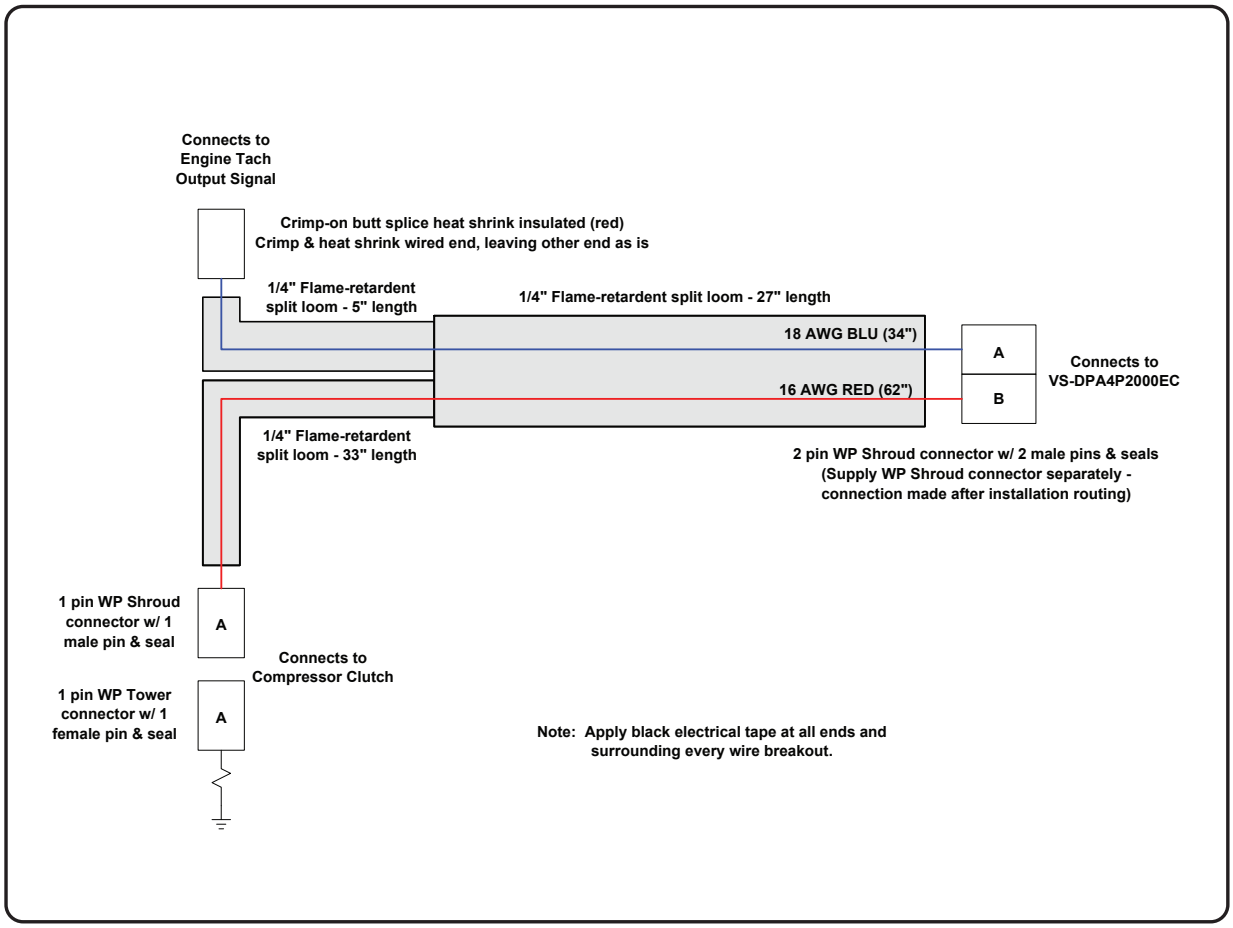
Compressor Clutch & Tach Output Harness:



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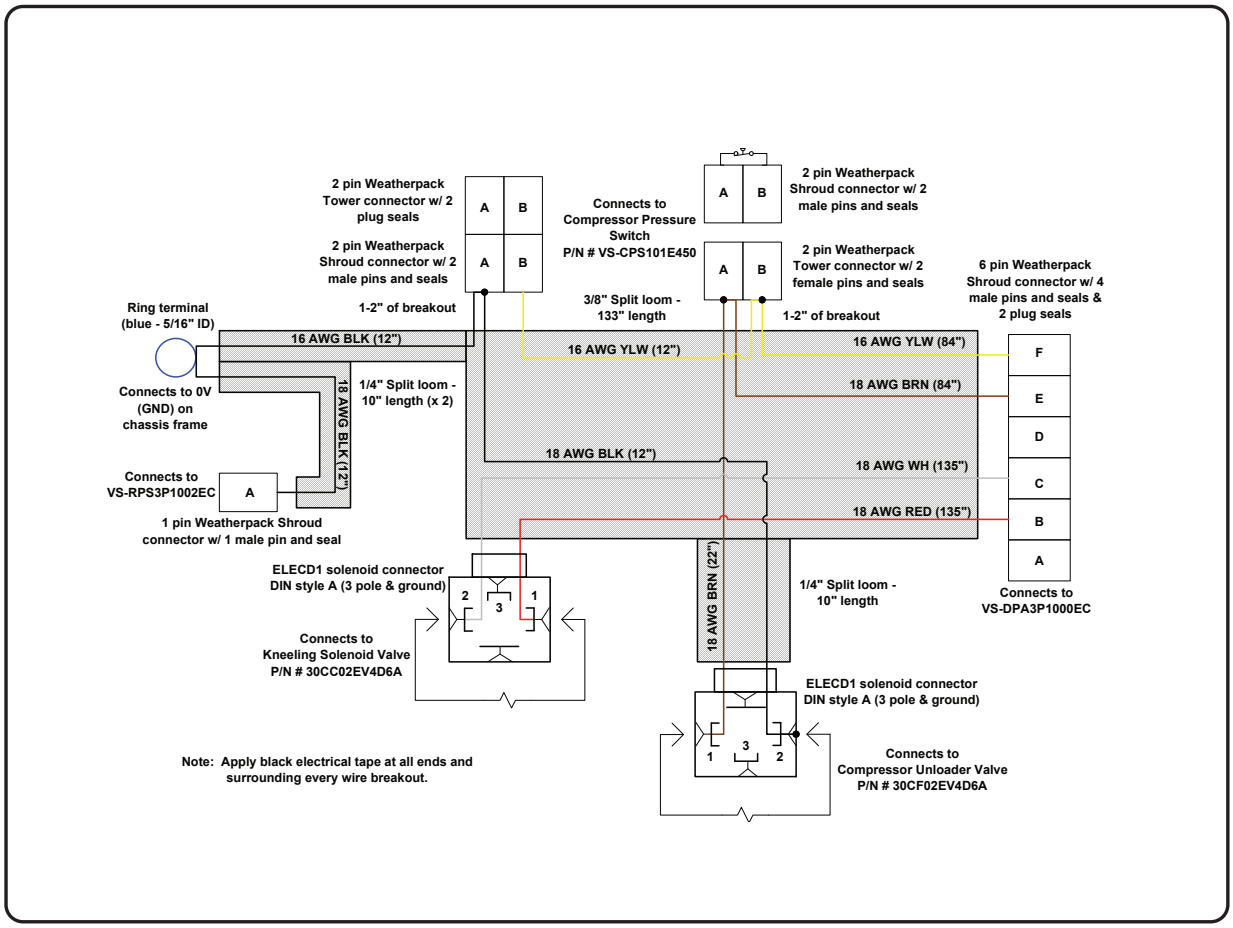
Compressor Module-Tank Harness:


2 pin Weatherpack Tower connector w/ 2 plug seals
A
B
2 pin Weatherpack Shroud connector w/ 2 male pins and seals
A
B
Connects to Compressor Pressure Switch P/N # VS-CPS101E450
A
B
2 pin Weatherpack Shroud connector w/ 2 male pins and seals
2 pin Weatherpack Tower connector w/ 2 female pins and seals
6 pin Weatherpack Shroud connector w/ 4 male pins and seals & 2 plug seals
Ring terminal (blue - 5/16" ID)
1-2" of breakout
3/8" Split loom - 133" length
1-2" of breakout
16 AWG BLK (12")
16 AWG YLW (12")
16 AWG YLW (84")
F
18 AWG BRN (84")
E
D
Connects to 0V (GND) on chassis frame
1/4" Split loom - 10" length (x 2)
18 AWG BLK (12")
18 AWG BLK (12")
18 AWG WH (135")
C
Connects to VS-RPS3P1002EC
A
18 AWG RED (135")
B
A
1 pin Weatherpack Shroud connector w/ 1 male pin and seal
ELECD1 solenoid connector DIN style A (3 pole & ground)
2
3
1
18 AWG BRN (22")
1/4" Split loom - 10" length
Connects to VS-DPA3P1000EC
Connects to Kneeling Solenoid Valve P/N # 30CC02EV4D6A
ELECD1 solenoid connector DIN style A (3 pole & ground)
1
3
2
Connects to Compressor Unloader Valve P/N # 30CF02EV4D6A
Note: Apply black electrical tape at all ends and surrounding every wire breakout.

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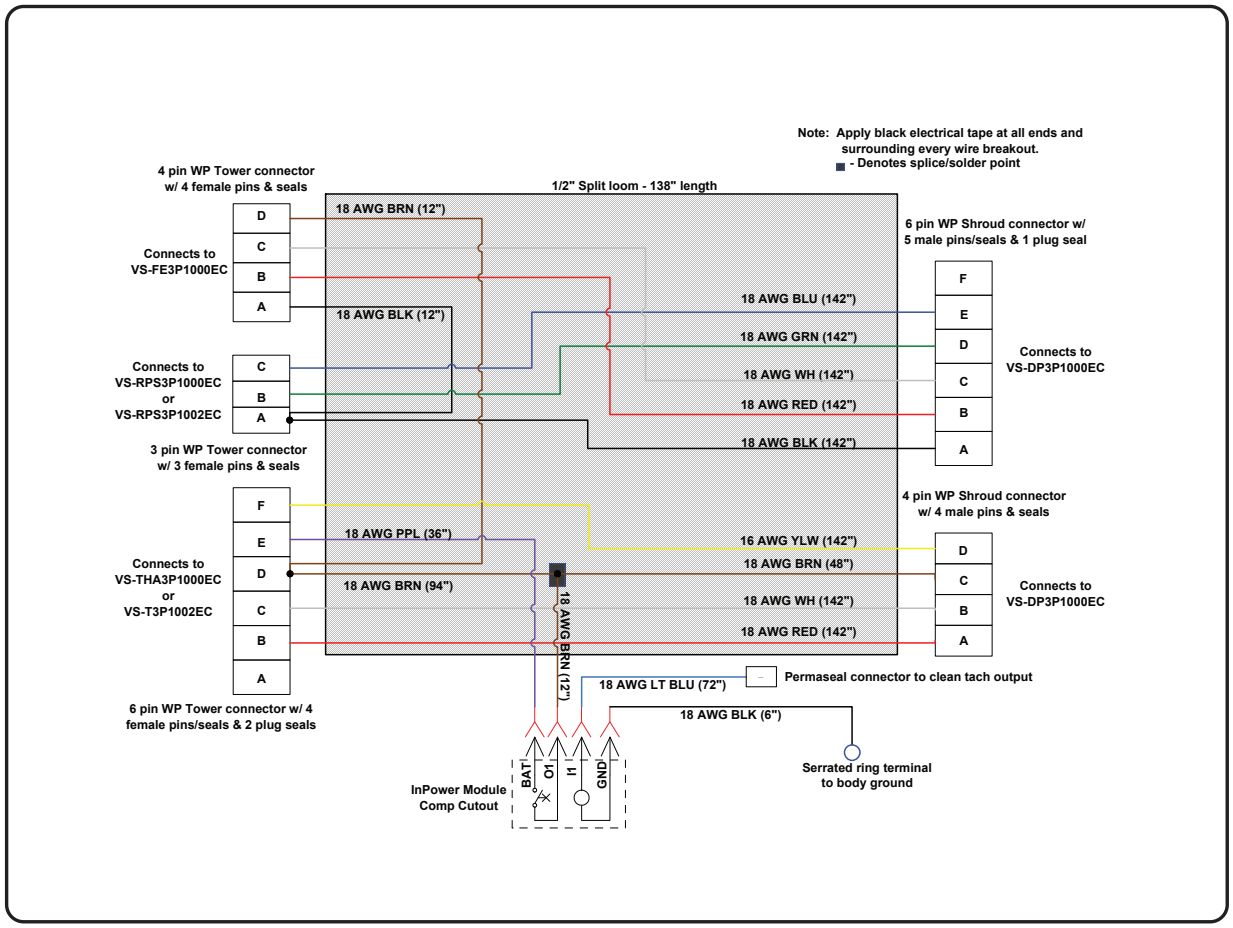
Module-Dash Panel Adapter Harness:


Note: Apply black electrical tape at all ends and surrounding every wire breakout.
■ - Denotes splice/solder point
4 pin WP Tower connector w/ 4 female pins & seals
1/2" Split loom - 138" length
18 AWG BRN (12")
6 pin WP Shroud connector w/ 5 male pins/seals & 1 plug seal
Connects to VS-FE3P1000EC
18 AWG BLK (12")
18 AWG BLU (142")
18 AWG GRN (142")
Connects to VS-RPS3P1000EC or VS-RPS3P1002EC
18 AWG WH (142")
Connects to VS-DP3P1000EC
18 AWG RED (142")
18 AWG BLK (142")
3 pin WP Tower connector w/ 3 female pins & seals
4 pin WP Shroud connector w/ 4 male pins & seals
18 AWG PPL (36")
16 AWG YLW (142")
Connects to VS-THA3P1000EC or VS-T3P1002EC
18 AWG BRN (48")
18 AWG BRN (94")
18 AWG WH (142")
Connects to VS-DP3P1000EC
18 AWG BRN (12")
18 AWG RED (142")
18 AWG LT BLU (72")
Permaseal connector to clean tach output
18 AWG BLK (6")
6 pin WP Tower connector w/ 4 female pins/seals & 2 plug seals
Serrated ring terminal to body ground
InPower Module Comp Cutout
BAT
IO
HI
GND

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IntelliSYNC® Pneumatic Harness System Schematics

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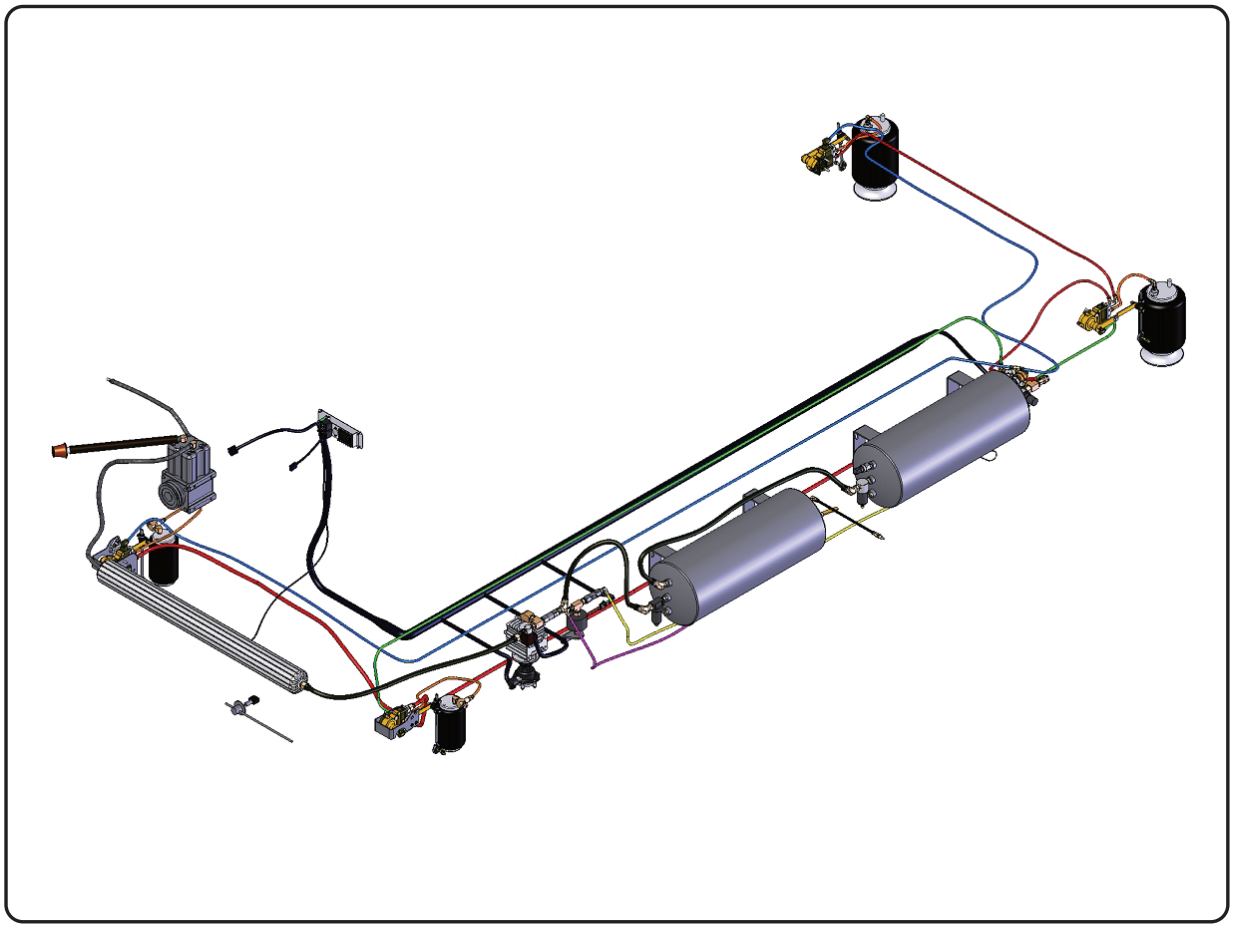
Pneumatic Harness System (pictorial):



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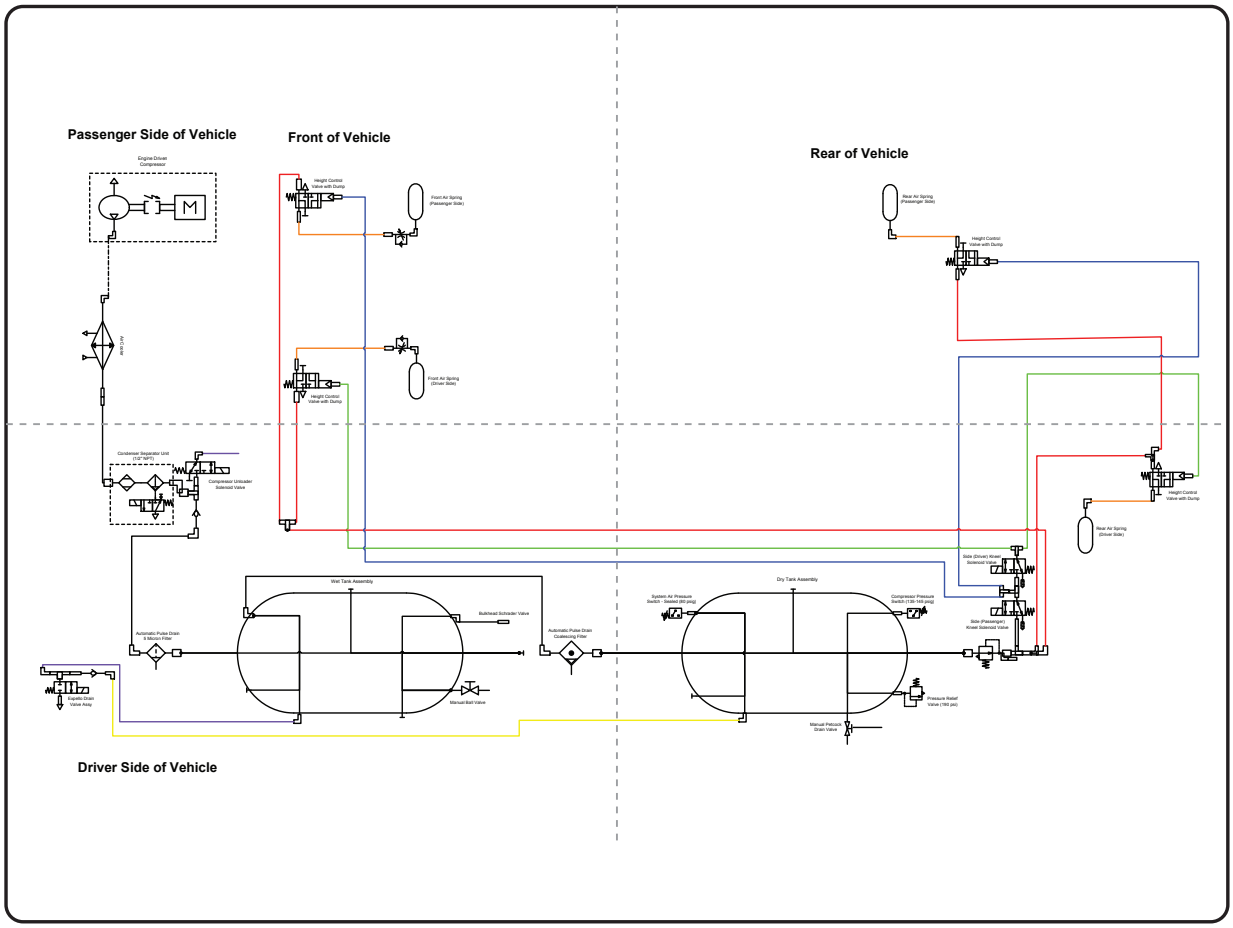
Pneumatic Circuit Diagram-Complete:


Passenger Side of Vehicle
Front of Vehicle
Rear of Vehicle
Driver Side of Vehicle
Engine Driver Compressor
Air Dryer
Condenser Separator Unit (1/2" NPT)
Compressor Unloader Solenoid Valve
Height Control Valve with Dump
Front Air Spring (Passenger Side)
Front Air Spring (Driver Side)
Rear Air Spring (Passenger Side)
Rear Air Spring (Driver Side)
Wet Tank Assembly
Bulkhead Schrader Valve
Automatic Pulse Drain & Micron Filter
Manual Ball Valve
Automatic Pulse Drain Coalescing Filter
Dry Tank Assembly
System Air Pressure Switch - Switch (90 psig)
Compressor Pressure Switch (130-145 psig)
Side (Driver) Knee Solenoid Valve
Side (Passenger) Knee Solenoid Valve
Pressure Relief Valve (165 psi)
Manual Petcock Drain Valve
Ezpelto Drain Valve Assy

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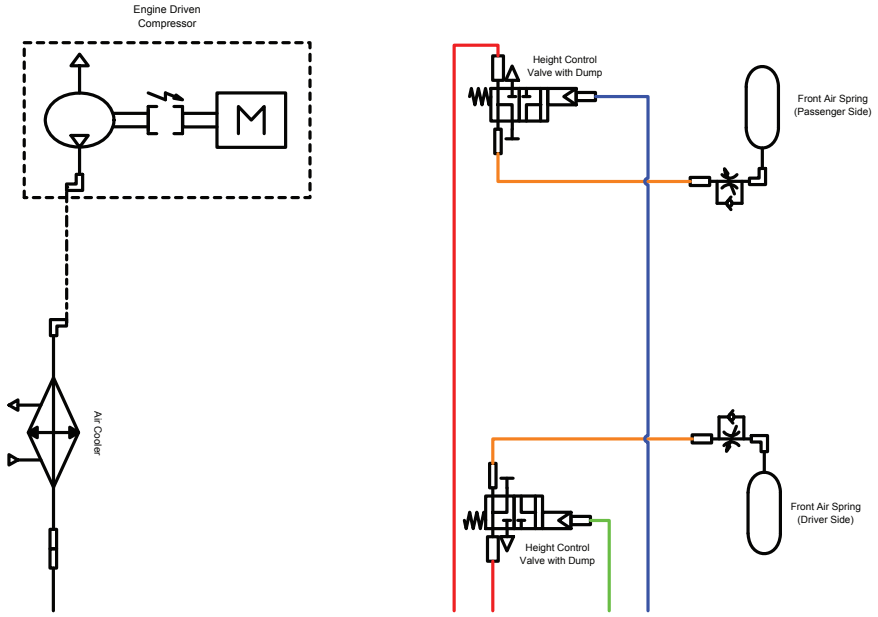
Upper, left quadrant close up view of diagram above:

Quadrant 1

Passenger Side of Vehicle

Front of Vehicle



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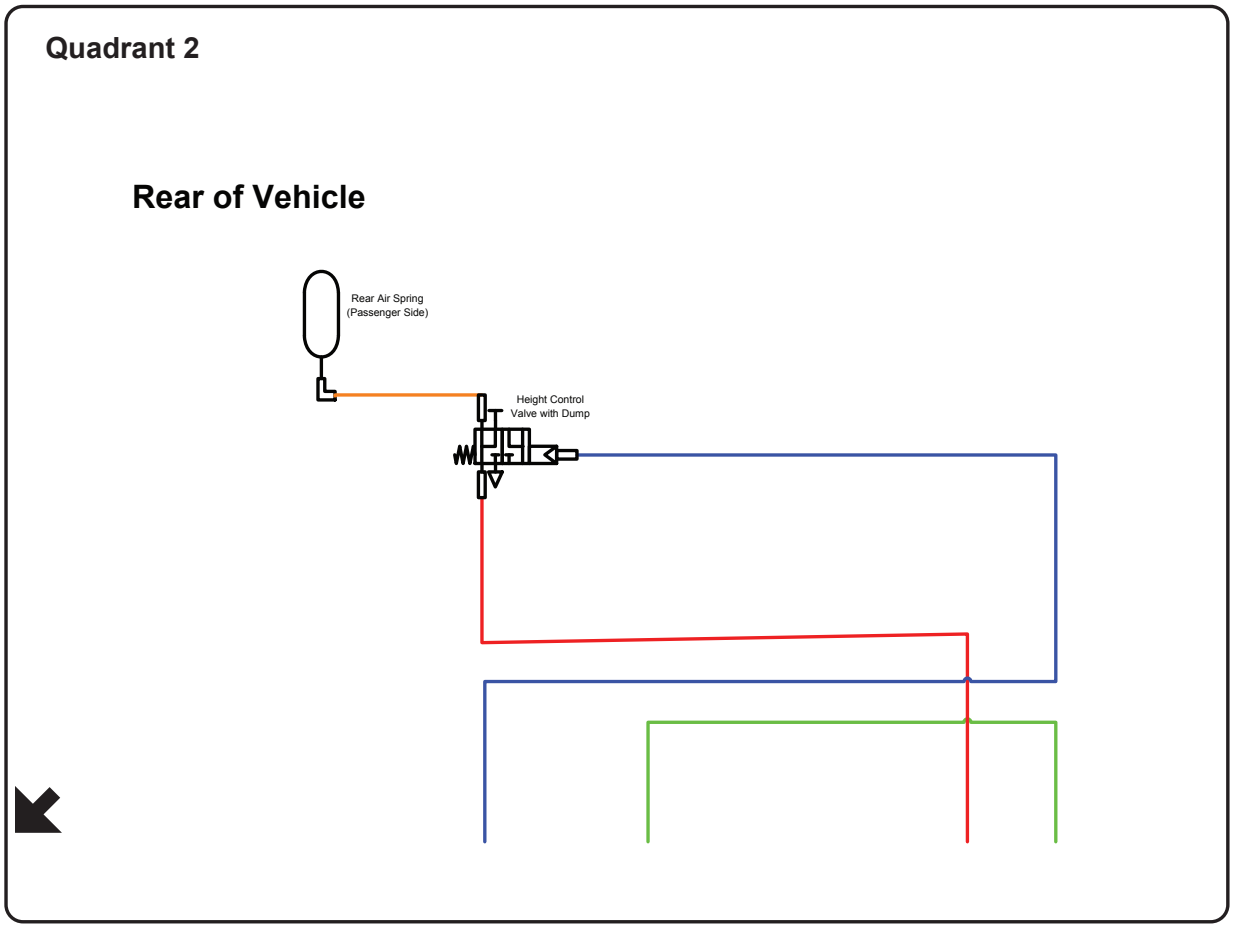
Upper, right quadrant close up view of diagram above:



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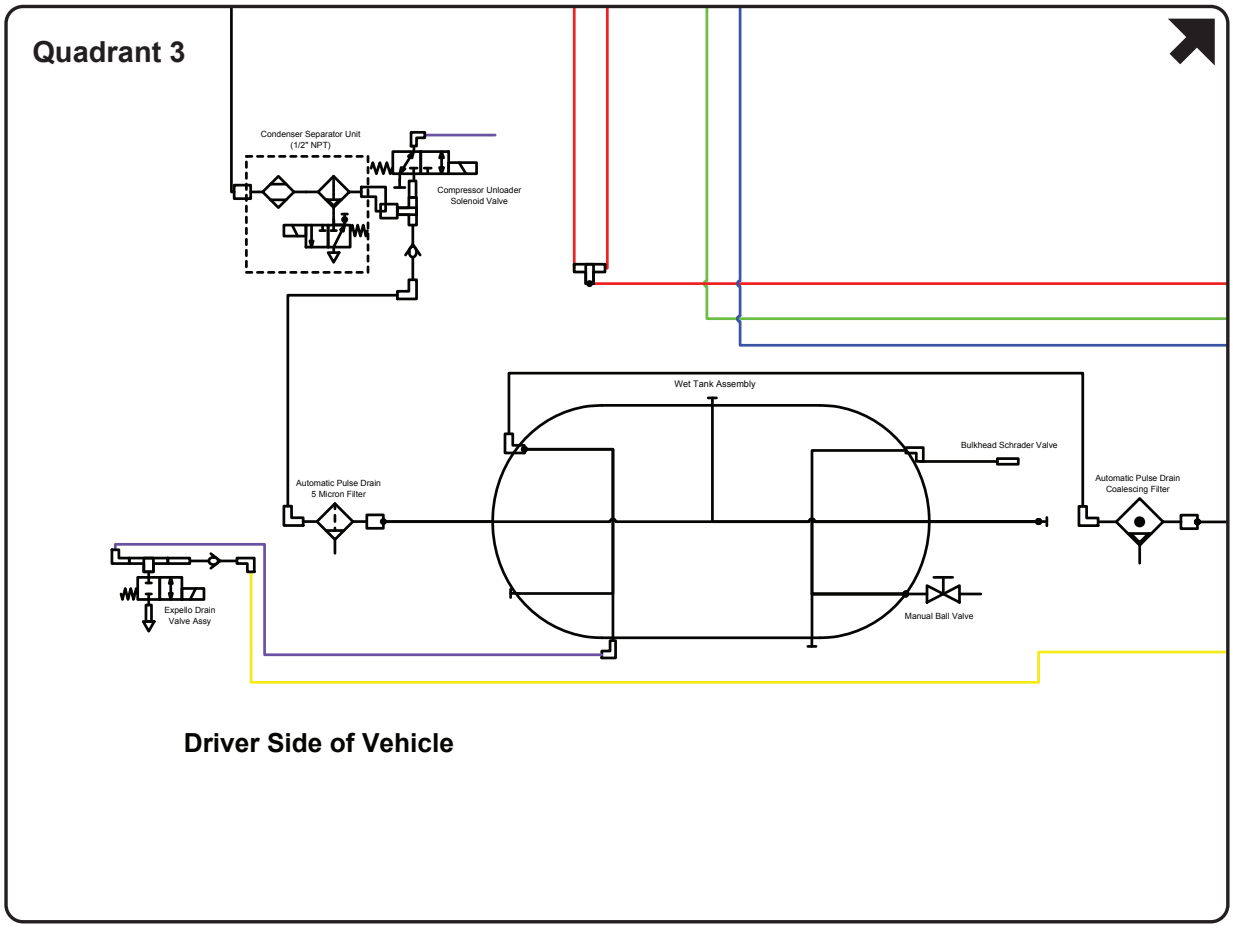
Lower, left quadrant close up view of diagram above:



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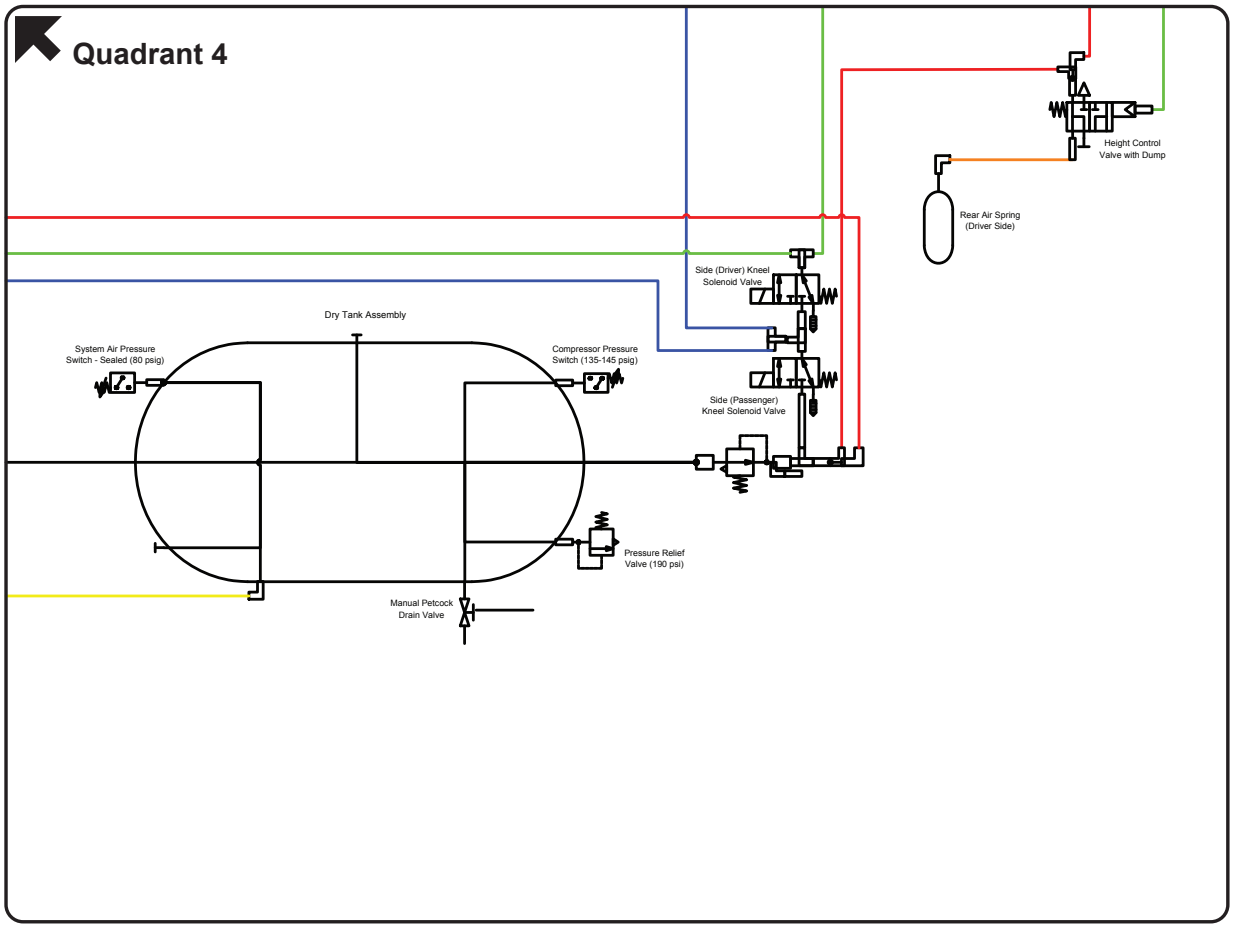
Lower, right quadrant close up view of diagram above:



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